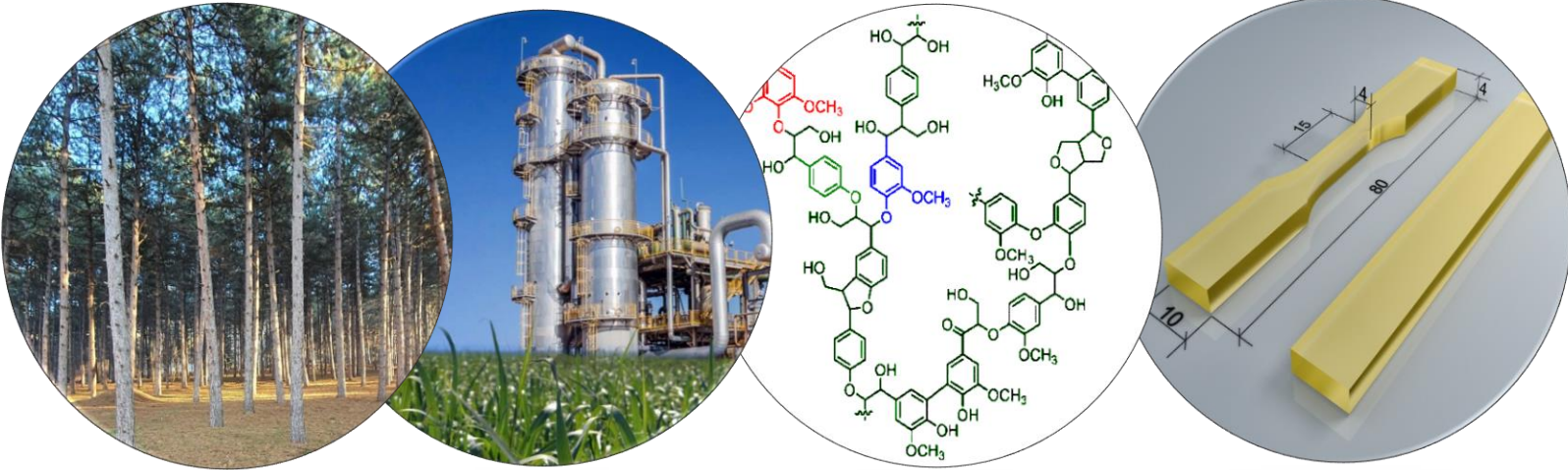


LignoCOST ONLINE TRAINING SCHOOL

'Modified Lignin Materials for Reactive Polymer Composites: Processing and Characterization'



REPORT

October 23, 2020

University of Belgrade, Faculty of Technology and Metallurgy (TMF), Faculty of Agriculture, Faculty of Forestry, Innovation center of the TMF (IC TMF), and Military Technical Institute, Serbia



www.lignocost.eu | CA17128 - Establishment of a Pan-European Network on the Sustainable Valorisation of Lignin

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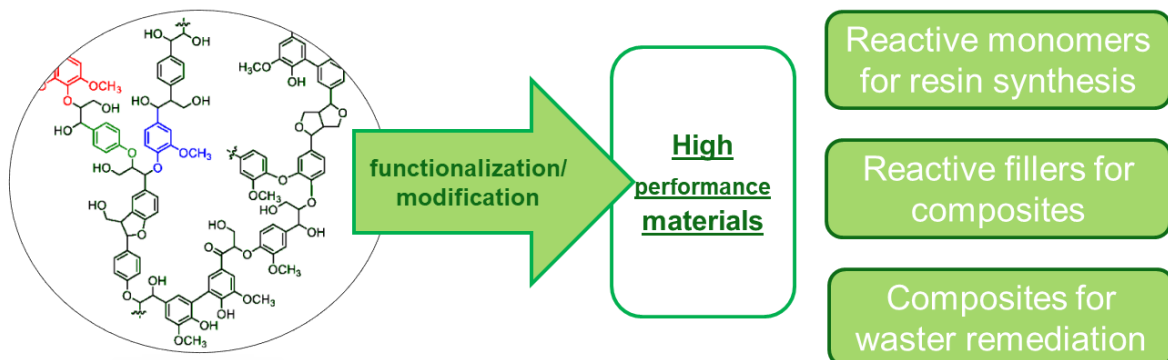
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Summary

The LignoCOST online training school, Modified Lignin Materials for Reactive Polymer Composites: Processing and Characterization, brought together a group of around 91 participants from 26 European countries, including 7 University of Belgrade trainers, to promote knowledge and relevant scientific information with a focus on lignin valorization towards sustainable industrial applications.

Organizers of the Training school were University of Belgrade, Faculty of Technology and Metallurgy (TMF), Innovation center of the TMF (IC TMF), Faculty of Agriculture, Faculty of Forestry, and Military Technical Institute, Serbia, in the framework of LignoCOST Action. The host of the meeting was Dr. Jelena Rusmirović, research associate from the Department for Materials and Protection, Military Technical Institute, Belgrade, Serbia, and researcher on the innovation projects within the group in IC TMF.

The Training school was divided into two sections. The first section was focused on Lignin depolymerization methods, Lignin chemical modification methods, developing of Lignin based composite materials and using Lignin in environmental protection. The second one was focused on lignin-based materials characterization with the high-light on morphology analysis and mechanical, dynamic-mechanical and thermal analysis.



LignoCOST training school objectives

The LignoCOST Training School provided intensive online presentation and training in research topics on lignin materials processing and characterization within the laboratories of University of Belgrade, Serbia:

Laboratory of Department for Organic Chemistry, TMF and IC TMF

The Lignin depolymerization and chemical modification methods, and structural characterization as well, are developed in TMF/IC TMF laboratory for Organic Chemistry. The selected materials (phosphorylated Kraft Lignin, polymer composites based on phosphorylated Kraft Lignin and polyester resins, and amino-modified lignin bio-sorbents) are used for demonstration in training school presentations/videos.

Laboratory for Electronic Microscopy, Faculty of Agriculture (FoA)

The demonstration of the morphological characterization of the lignin-based materials (lignin isolated from different plant sources and using different isolation methods, modified lignin, amino modified lignin microspheres, etc) was performed on JEOL JSM-6390 scanning electron microscope, and TEM 1400 transmission electron microscope.

Laboratory of Department for Materials and Protection, Military Technical Institute (MTI), Belgrade, Serbia

The demonstration of the mechanical, dynamic-mechanical and thermal characterization of the composites based on (un)modified lignin and different polymer matrices, including composites based on phosphorylated Kraft Lignin/unsaturated polyester resin was performed Instron 1122 Testing machine, MCR 302 Modular Compact Rheometer, and standard flame-retardancy tests.

LignoCOST training school agenda

10.00-10.20 Welcome & Introduction (LignoCOST coordinator and local organizer)

10.20-11.00 Oral and video presentation (35 min + 5 min discussion total 40 min)

Prof. dr Milica Rančić/ University of Belgrade, Faculty of Forestry - Lignin depolymerization methods – From Lignin to Valuable Oligomers/Monomers for Polymer Materials Preparation

11.00-11.40 Oral and video presentation (35 min + 5 min discussion total 40 min)

dr Jelena Rusmirovic/ Military Technical Institute, Department for Materials and Protection, Belgrade, Serbia – Reactive Lignin Materials for High Performance Composites- Modification Methods and Characterization

12.40-12.00 Oral presentation (15 min + 5 min discussion total 20 min)

Ana Popović/ University of Belgrade, Faculty of Technology and Metallurgy - Lignin microspheres: A novel eco-friendly adsorption material

12.00-12.20 Oral presentation (15 min + 5 min discussion total 20 min)

Jelena Bebić/ University of Belgrade, Faculty of Technology and Metallurgy – Porous amino modified lignin materials for enzyme immobilization

12.20-13.20 Break for Lunch on your own

13.20-13.40 Oral presentation (15 min + 5 min discussion total 20 min)

Nikola Stanojevic and Danilo Zivkovic/ White Lemur Ltd., Serbia, soma.eco - Using lignin and cellulose-rich waste for the production of innovative biotic materials through the utilization of microorganisms, fungi, and derived enzymes

13.40-14.20 Oral and video presentation (35 min + 5 min discussion total 40 min)

dr. Tihomir Kovacevic, Military Technical Institute, Department for Materials and Protection, Belgrade, Serbia - Mechanical and Rheological Characterization of Lignin based Materials

14.20-15.00 Oral and video presentation (35 min + 5 min discussion total 40 min)

prof. dr Vladimir Pavlovic/University of Belgrade, Faculty of Agriculture - Scanning and Transmission Electronic Microscopy in Lignin based Materials Characterization

15.00-15.20 Closing of the training school (LignoCOST coordinator and local organizer)